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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/607,869

06/27/2003

Zhongze Wang

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21567

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06/25/2004

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EXAMINER

KENNEDY, JENNIFER M

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,869

Applicant(s)

WANG, ZHONGZE

Examiner

Jennifer M. Kennedy

Art Unit

2812

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 49-61 is/are pending in the application.
- 4a) Of the above claim(s) 50-54 and 57-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 49, 55, 56, 60 and 61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/27, 12/19, 4/12.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 49, 55, 56, 60 and 61 in the reply filed on April 12, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 49 is rejected under 35 U.S.C. 102(e) as being anticipated by Kunikiyo (U.S. Patent No. 6,661,065).

Kunikiyo (see column 26, line 10 through column 28, line 60 and Figure 49) discloses the method of forming silicon-on-insulator comprising integrated circuitry, comprising:

forming the silicon comprising layer (74) of the silicon-on-insulator circuitry;

Art Unit: 2812

forming a pair of source/drain regions (4) in the silicon comprising layer and a channel region (7) in the silicon comprising layer which is received intermediate the source/drain regions;

forming a transistor gate (90) operably proximate the channel region;

forming the insulator layer of the silicon-on-insulator circuitry, the insulator layer being formed to comprise a first silicon dioxide comprising region, in contact with the silicon comprising layer and running along at least a portion of the channel region between the source/drain regions, a silicon nitride comprising region in contact with the first silicon dioxide comprising region and running along at least a portion of the channel region, and a second silicon dioxide comprising region in contact with the silicon nitride comprising region, the silicon nitride comprising region being received intermediate the first and second silicon dioxide comprising regions (see especially column 28, lines 51-55, and column 26, line 5 through column 28, line 55).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2812

Claims 55-56 and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunikiyo (U.S. Patent No. 6,661,065) in view of Xiang (U.S. Patent No. 6,410,938).

In re claims 55-56, Kunikiyo discloses the method as claimed and rejected above, but does not disclose the method wherein the forming the silicon nitride comprising region comprising nitridizing after forming the joined substrate and wherein the nitridizing comprises ion implanting.

Xiang discloses the method of method wherein the forming the silicon nitride comprising region comprising nitridizing after forming the joined substrate and wherein the nitridizing comprises ion implanting (see column 2, lines 40-50, column 3, lines 30-41 and column 4, lines 34-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have nitridized after joining the substrates and the nitridizing comprises ion implanted rather than the deposition method of Kunikiyo because as Xiang discloses the nitridizing method allows for a high quality nitride that reduces or prevents depletion of dopant material from the channel regions (see column 1, lines 40-55).

In re claim, 60, the combined method of Kunikiyo and Xiang teach that the silicon nitride comprising region is formed to have a thickness of from about 10 Angstroms to about 50 Angstroms (see Xiang column 3, lines 30-40).

In re claim 61, neither Kunikiyo and Xiang teach the method wherein the first silicon dioxide comprising region is formed to have a thickness of from about 10 Angstroms to about 50 Angstroms.

Art Unit: 2812

The examiner notes that Applicant does not teach that the thickness range solves any stated problem or is for any particular purpose. Therefore, the thickness range lacks criticality in the claimed invention and does not produce unexpected or novel results. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the silicon oxide to a thickness of from about 10 Angstroms to about 50 Angstroms, since the invention would perform equally well when the insulating layer of the SOI substrate is formed to a different thickness and because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233, MPEP 2144.05 II A.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (571) 272-1672. The examiner can normally be reached on Mon.-Fri. 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2812

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer M. Kennedy
Patent Examiner
Art Unit 2812